



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/690,613

10/23/2003

Christopher Douglas Moffatt

HAR62 014

5924

77617 7590 07/06/2009

Duane Morris LLP (Harris Corp.)

IP Department

505 9th Street N.W.

Suite 1000

Washington, DC 20004-2166

EXAMINER

LUGO, DAVID B

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

07/06/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/690,613	<b>Applicant(s)</b> MOFFATT ET AL.	
	<b>Examiner</b> DAVID B. LUGO	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 2 is/are allowed.
- 6) ☒ Claim(s) 3-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/5/09</u> .                                                  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments, see page 2, filed 4/13/09, with respect to the rejection of claims 1 and 2 have been fully considered and are persuasive. Corral does not disclose that a data map signal is appended to the modulated data signal to thereby create an appended signal, where the appended signal is then sampled, where subsequently the sampled signal has the amplitude of samples exceeding a predetermined range reduced. The rejection of claims 1 and 2 has been withdrawn.
2. Applicant's arguments filed 4/13/09 with respect to the rejection of claims 3-13 have been fully considered but they are not persuasive.
3. Regarding claims 3 and 8, Applicant argues that the combination of Corral with Weerackody does not disclose that the selection of the sequences is based on a comparison of a peak-to-average power ratio. In response, it is noted that Corral discloses sequencing data according to one or more unique sequences and selecting one of a plurality of modulated sequences based on selection criteria (step 712). Weerackody discloses that selection criteria in a PAPR system may include comparison of the PAPR of a signal to a threshold. Thus, the combination of the selection criteria of Weerackody with the PAPR reduction system of Corral fairly suggests that one of the sequences of Corral may be selected based on a threshold comparison. Accordingly, the rejection of claims 3 and 8 is maintained.
4. Regarding claims 6 and 11, Applicant argues that the combination of Corral with Weerackody does not disclose sequencing data to be transmitted based upon a resultant comparison of the PAPR of the modulated sequence to a first threshold value. In response, it is

Art Unit: 2611

noted that Corral discloses sequencing data, and selecting one of a plurality of modulated sequences based on selection criteria (step 712). Weerackody discloses that selection criteria in a PAPR system may include comparison of the PAPR of a signal to a threshold. Weerackody further discloses that the comparison results may be fed back so as to generate a PAPR reduced signal based on the comparison. Thus, the combination of the selection criteria of Weerackody with the PAPR reduction system of Corral fairly suggests that data may be sequenced based on a threshold comparison. Accordingly, the rejection of claims 6 and 11 is maintained.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corral U.S. Patent No. 6,925,128 in view of Weerackody U.S. Patent No. 6,950,389 and Feng et al. U.S. Patent Application Publication No. 2004/0146115.

Regarding claims 3 and 8, Corral discloses a method of transmitting data in a multi-carrier communication system (see Fig. 7) comprising sequencing data according to one or more unique sequences by reordering elements (step 706) which creates a plurality of candidate input vectors (col. 11, lines 29-31), modulating one of the unique sequences of data (step 708), and selecting one of the modulated sequences of data based upon a selection criteria (step 712). Corral, also discloses that clipping can be combined with other PAPR methods (col. 5, lines 5-7). Corral does not expressly disclose that the selection of the sequences is based on a comparison of

Art Unit: 2611

a peak-to-average power ratio of the sequence to a first threshold, and also does not expressly disclose filtering the selected sequence to remove amplitude peaks outside a second threshold band to create a filtered signal, and transmitting the filtered signal.

Weerackody discloses a method of peak-to-average power reduction including selecting a signal to be transmitted based on a comparison of the PAPR of a signal with a threshold (Fig. 4; col. 1, line 60 to col. 2, line 9; col. 4, line 20 to col. 5, line 20). It would have been obvious to one of ordinary skill in the art to use the PAPR method of Weerackody in the system of Corral as it is an alternative way of ensuring that the PAPR is reduced which one of ordinary skill in the art would recognize to be an art-recognized equivalent.

Feng discloses a PAPR reduction approach where the amplitude levels of the transmitted signal exceeding a threshold is reduced, and the reduced signal is subsequently filtered prior to transmission (para. 10). It would have been obvious to one of ordinary skill in the art to combine the teachings of Feng with the method of Corral and Weerackody to provide further PAPR reduction which can offer advantages in terms of reducing hardware complexity (see Corral, col. 5, lines 5-7).

Regarding claims 4 and 9, as disclosed by Feng, filtering includes comparing the amplitude levels to a threshold and reducing the amplitudes exceeding the threshold. Further, Corral discloses that digital samples of the signal are output from processor 108 (see col. 9, lines 43-48). One of ordinary skill in the art would recognize that the comparison of Feng may be made in the digital domain using samples as a matter of design consideration.

Regarding claims 5 and 10, one of ordinary skill in the art would recognize that the filtering operation of Feng would also result in the some attenuation of adjacent samples.

Art Unit: 2611

Regarding claim 6, Corral discloses a method of preventing limiting of a linear amplifier in a multi-carrier communication system (see Fig. 7) comprising sequencing data according to one or more unique sequences by reordering elements (step 706) which creates a plurality of candidate input vectors (col. 11, lines 29-31), and modulating one of the unique sequences of data (step 708). Corral discloses that digital samples of the signal are output from processor 108 (see col. 9, lines 43-48). Thus, samples are provided at the output of processor 108 (Fig. 1). Accordingly, the step of sampling the modulated sequenced data is deemed a design consideration that fails to patentably distinguish over the prior art of Corral, as Corral also provides a sampled output for further processing. Corral, further discloses that clipping can be combined with other PAPR methods (col. 5, lines 5-7). Corral does not expressly disclose that the sequencing is based on a comparison of a peak-to-average power ratio of the sequence to a first threshold, and also does not expressly disclose reducing amplitudes of samples outside a predetermined threshold, and transmitting the resultant signal.

Weerackody discloses a method of peak-to-average power reduction including selecting a signal to be transmitted based on a comparison of the PAPR of a signal with a threshold (Fig. 4; col. 1, line 60 to col. 2, line 9; col. 4, line 20 to col. 5, line 20). It would have been obvious to one of ordinary skill in the art to use the PAPR method of Weerackody in the system of Corral as it is an alternative way of ensuring that the PAPR is reduced which one of ordinary skill in the art would recognize to be an art-recognized equivalent.

Feng discloses a PAPR reduction approach where the amplitude levels of the transmitted signal exceeding a threshold is reduced, and the reduced signal is subsequently filtered prior to transmission (para. 10). It would have been obvious to one of ordinary skill in the art to combine

Art Unit: 2611

the teachings of Feng with the method of Corral and Weerackody to provide further PAPR reduction which can offer advantages in terms of reducing hardware complexity (see Corral, col. 5, lines 5-7).

Regarding claim 7, one of ordinary skill in the art would recognize that the filtering operation of Feng would also result in the some attenuation of adjacent samples.

Regarding claim 11, Corral discloses a transmitter in Fig. 1 in a multi-carrier communications system for transmitting data with multiple carriers comprising a modulator 108 for modulating multi-carrier symbols with the data (col. 9, lines 35-41), a processor (calculator 204 – Fig. 2) for measuring the peak-to-average power ratio of the modulated data (col. 10, lines 20-23), a logic device (comparator 114) to choose a desired output, and a processor (reorderer 104) for resequencing the data. Corral also discloses that clipping can be combined with other PAPR methods (col. 5, lines 5-7). Corral does not expressly disclose comparing the PAPR with a predetermined threshold, and also does not expressly disclose an amplitude filter for reducing peaks of the modulated data signal that are outside a predetermined range.

Weerackody discloses a method of peak-to-average power reduction including selecting a signal to be transmitted based on a comparison of the PAPR of a signal with a threshold (Fig. 4; col. 1, line 60 to col. 2, line 9; col. 4, line 20 to col. 5, line 20). It would have been obvious to one of ordinary skill in the art to use the PAPR method of Weerackody in the system of Corral as it is an alternative way of ensuring that the PAPR is reduced which one of ordinary skill in the art would recognize to be an art-recognized equivalent.

Feng discloses a PAPR reduction approach where the amplitude levels of the transmitted signal exceeding a threshold is reduced, and the reduced signal is subsequently filtered prior to

Art Unit: 2611

transmission (para. 10). It would have been obvious to one of ordinary skill in the art to combine the teachings of Feng with the method of Corral to provide further PAPR reduction which can offer advantages in terms of reducing hardware complexity (see Corral, col. 5, lines 5-7).

Regarding claims 12 and 13, FIR and IIR filters are well known in the art of digital filtering. One of ordinary skill in the art would recognize that FIR or IIR filters may be implemented in the filter of Feng as a matter of design consideration.

***Allowable Subject Matter***

7. Claims 1 and 2 allowed.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID B. LUGO whose telephone number is (571)272-3043. The examiner can normally be reached on M-F; 9:30-6.



Art Unit: 2611

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3066. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David B. Lugo/  
Primary Examiner, Art Unit 2611  
7/5/09